

6 Chapter 6 Test, Form 2D

1. Bruce is building a tabletop in the shape of an octagon. Find the sum of the external angles of the tabletop.

1. 360°

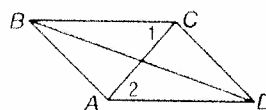
2. A convex octagon has interior angles with measures $(x + 55)^\circ$, $(3x + 20)^\circ$, $4x^\circ$, $(4x - 10)^\circ$, $(6x - 55)^\circ$, $(3x + 52)^\circ$, $3x^\circ$, and $(2x + 30)^\circ$. Find the value of x . $26x + 42 = 1080$

2. 38

3. If the measure of each interior angle of a regular polygon is 176 find the number of sides in the polygon.

3. 90 sides

4. In parallelogram $ABCD$, $m\angle 1 = x + 25$, and $m\angle 2 = 2x$. Find $m\angle 2$.

4. 50°

5. Find the measure of each exterior angle of a regular 100-gon.

5. 3.6

6. In parallelogram $ABCD$, $m\angle A = 63$. Find $m\angle B$.

6. 117°

7. Find the coordinates of the intersection of the diagonals of parallelogram $XYZW$ with vertices $X(3, 0)$, $Y(3, 8)$, $Z(-2, 6)$, and $W(-2, -2)$.

7. midpt $(\frac{1}{2}, 3)$

8. Determine whether this quadrilateral is a parallelogram. Justify your answer.

8. Yes. Both pairs of opp sides are \parallel

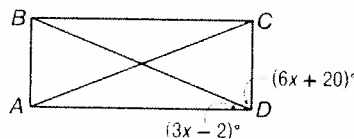
9. Determine whether a quadrilateral with vertices $A(5, 7)$, $B(1, -1)$, $C(-6, -3)$, and $D(-2, 5)$ is a parallelogram. Use the slope formula.

9. Yes. $\overline{AB} \parallel \overline{CD}$
 $\overline{BC} \parallel \overline{DA}$

10. If the slope of \overline{AB} is $\frac{1}{2}$, the slope of \overline{BC} is -4 , and the slope of \overline{CD} is $\frac{1}{2}$, find the slope of \overline{DA} so that $ABCD$ is a parallelogram.

10. -4

11. For rectangle $ABCD$, find the value of x .

11. 8

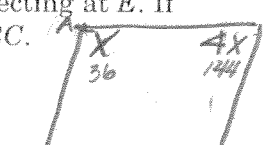
12. $ABCD$ is a parallelogram and $m\angle A = 90$. Determine whether $ABCD$ is a rectangle. Justify your answer.

12. Yes. One rt. \angle means that the other \angle s will be right.

6 Chapter 6 Test, Form 2D (continued)

13. $ABCD$ is a rhombus with diagonals intersecting at E . If $m\angle ABC$ is four times $m\angle BAD$, find $m\angle EBC$.

$$\begin{aligned} x + 4x &= 180 \\ 5x &= 180 \\ x &= 36 \end{aligned}$$

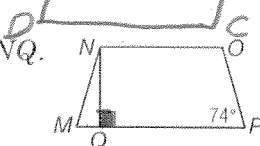


13. 72

14. $PQRS$ is a square with $Q(-2, 8)$, $R(5, 7)$, and $S(4, 0)$. Find the coordinates of P .

14. $(-3, 1)$

15. For isosceles trapezoid $MNOP$, find $m\angle MNQ$.



15. 16°

16. $ABCD$ is a quadrilateral with $A(8, 21)$, $B(10, 27)$, $C(26, 26)$, and $D(18, 2)$. Determine whether $ABCD$ is a trapezoid. Justify your answer.

16. Yes. $ABCD$ has only one pair of opp sides \parallel
8

17. The length of the median of trapezoid $EFGH$ is 17 centimeters. If the bases have lengths $2x + 4$ and $8x - 50$, find the value of x .

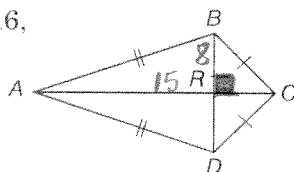
midsegment +

$$17 = \frac{1}{2}(2x + 4 + 8x - 50)$$

17. 8

18. For kite $ABCD$, if $RA = 15$, and $BD = 16$, find AD .

$$a^2 + b^2 = c^2$$



18. 17

For Questions 19–25, write *true* or *false*.

19. A parallelogram always has four right angles.

19. False

20. The diagonals of a rhombus always bisect the angles.

20. True

21. A rhombus is always a square.

21. False

22. A rectangle is always a square.

22. False

23. The diagonals of an isosceles trapezoid are always congruent.

23. True

24. The median of a trapezoid always bisects the angles.

24. False

25. The diagonals of a kite are always perpendicular.

25. True

Bonus The measure of each interior angle of a regular polygon is 24 more than 38 times the measure of each exterior angle. Find the number of sides of the polygon.

$$(24 + 38x) + x = 180$$

$$24 + 39x = 180$$

$$39x = 156$$

$$x = 4$$

$$Ext = 4^\circ$$

$$360 \div 4 = 90$$

B: 90 sides